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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,376	07/30/2003	Eric J. Bergman	54008.8033.US00 P03-0004	2135
45540 7590 02/22/2007 PERKINS COIE LLP/SEMITOOL PO BOX 1208 SEATTLE, WA 98111-1208			EXAMINER EL ARINI, ZEINAB	
			ART UNIT 1746	PAPER NUMBER

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/631,376

Applicant(s)

BERGMAN, ERIC J.

Examiner

Zeinab E. EL-Arini

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-24,33-36 and 42-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-24,33-36 and 42-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

The amendment and remarks filed 12/5/06 have been acknowledged and entered.

The rejection under 35 U.S.C. 112, second paragraph stated in paper No. 20060922 has been withdrawn in view of applicants' amendment.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 20-24, and 45-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP'177 in combination with Park(5,994,238) or Han et al. (6,740,247) new reference .

EP'177 discloses a method for etching semiconductor wafer. The reference teaches placing the wafer into a process chamber, the delivering steps, spraying the DI water, dissolving the anhydrous HF gas into the DI water, and the etching and the spinning as claimed. See the abstract, Fig. 1, page 2, lines 21-27, 55-58, page 3, lines 11-page 4, line 24, and the claims.

EP' as discussed supra discloses all limitation with the exception of thinning the silicon wafer, the controlling step, and the etch rate as claimed.

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1. Park discloses a method for fabricating semiconductor device. The reference discloses etching the wafer, the HF vapor, and the steps are performed in vapor phase. See the abstract, col. 1, line 35- col. 3, line 36.
2. Han et al. disclose HF vapor phase wafer cleaning and oxide etching. The reference discloses thinning the wafer by using HF vapor. See col. 1, line 64- col. 2, line 6, col. 2, line 60- col. 3, line 11. The reference discloses the etch rate depends on the temperature and the pressure. See col. 10, lines 8-col. 11, line 10, examples 11-18, and col. 19, lines 41-48.
3. It would have been obvious for one skilled in the art to use the etch rate taught by Park (see claim 1) or Han et al. in the process taught by EP'177 to obtain the claimed process. The rate of etching or thinning the wafer depends on the temperature and the pressure of the HF. Controlling the thickness of the liquid layer is well known in the art.
4. Claims 33-36, 42-44 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP'177 in combination Park or Han et al. as applied to claims 20-24, and 45-49 above, and further in view of Schaper et al (US 005/0006738 A1) or Masumoto (US 2004/0214432 A1).

EP'177 in combination with Park or Han et al. as discussed supra teach all limitation with the exception of reducing the wafer thickness or thinning the silicon wafer by back –grinding.

Schaper et al. disclose a method of thinning silicon wafer by back-grinding and/ or plasma etching. See paragraphs 24, 35, and claims 1, 9.

Masumoto discloses a method of thinning a semiconductor wafer comprising back-grinding. See paragraph 19-23, 28, and claims 1-9, 16.

It would have been obvious for one skilled in the art to use the back-grinding step taught by Schaper et al. or Masumoto in process taught by the EP'177 in combination with park or Han et al. to obtain the claimed process. This is because all references are from the same technical endeavor, which is a method of etching or thinning a semiconductor wafer. Back-grinding, followed by HF/ozone may be used to create clean surface.

Response to Arguments

5. Applicant's arguments filed 12/5/06 have been fully considered but they are not persuasive. Applicants' argument with respect to EP'177 does not teach controlling the thickness, because it discloses conducting a single stream of water is unpersuasive, because the process as claimed does not exclude this limitation. Controlling the thickness of the liquid layer is inherent in the EP'177, because adjusting water flow and the spin rate is inherently including adjusting the thickness of the liquid layer. Removing silicon in bulk is not included in the claim. With respect to the etch rate, one skilled in the art would adjust the etching rate to obtain optimum results. One skilled in the art would adjust the spinning to control the thickness of the liquid layer.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeinab E. EL-Arini whose telephone number is (571) 272-1301. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Zeinab E. EL-Arini
Zeinab E. EL-Arini
Primary Examiner
Art Unit 1746

ZEE
2/18/07